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EXAMINER

KERR, KATHLEEN M

ART UNIT

PAPER NUMBER

1652

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Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/496,041

Applicant(s)

TAKANO ET AL.

Examiner

Kathleen M Kerr

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 21 May 2002.
- 2a) ☐ This action is FINAL. ~~2b) ☒ This action is non-final.~~
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-8 and 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☒ Other: *Abstract (JP 09037785)*.

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## **DETAILED ACTION**

### ***Application Status***

1. In response to the previous Office action (Advisory action, Paper No. 13 mailed on April 1, 2002), Applicants filed for continued prosecution of the instant application (see below). With this request, the amendment received March 6, 2002, previously not entered as an after-final amendment, has now been entered. Said amendment amended Claims 1, 3, and 4 as well as amending the specification.

Claims 1-8 and 20 are pending in the instant application and will be examined herein.

### ***Continued Prosecution Application***

2. The request filed on May 21, 2002 (Paper No. 14) for a Continued Prosecution Application (CPA) under 37 C.F.R. § 1.53(d) based on parent Application No. 09/496,041 is acceptable and a CPA has been established. An action on the CPA follows.

### ***Priority***

3. As previously noted, receipt is acknowledged of papers submitted under 35 U.S.C. § 119(a)-(d), which papers have been placed of record in the file. The priority claim in the instant application is based on a foreign language priority document for which no translation has been provided. Thus, for the purposes of prior art, the U.S. filing date of February 2, 2000 is considered the effective filing date.

### ***Information Disclosure Statement***

4. As previously noted, three (3) information disclosure statements have been filed in the instant application on February 2, 2000, June 13, 2000, and August 23, 2000 (Paper NOs. 5, 6,

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and 7); all three IDSs have been considered. Since no relevance can be cited for EP 023716, this reference has not been considered.

***Drawings***

5. As previously noted, the drawings have been approved by the Draftsmen and are, therefore, entered as formal drawings acceptable for publication upon the identification of allowable subject matter.

***Withdrawn - Objections to the Specification***

6. Previous objection to the amendment filed on July 16, 2001 under 35 U.S.C. § 132 for introducing new matter is withdrawn by virtue of Applicants' amendment deleting all new matter.

***Withdrawn - Objections to the Claims***

7. Previous objection to Claim 1 for not having the proper form is withdrawn by virtue of Applicants' amendment.

***Withdrawn - Claim Rejections - 35 U.S.C. § 112***

8. Previous rejection of Claims 1, 5-8, and 20 under 35 U.S.C. § 112, second paragraph, as being indefinite for the term "precursor" in Claim 1 is withdrawn by virtue of Applicants' amendment defining said term in the claims as selected from one of four precursor compounds.

9. Previous rejection of Claims 3 and 4 under 35 U.S.C. § 112, first paragraph, new matter, is withdrawn by virtue of Applicants' amendment deleting all new matter.

***Maintained - Claim Rejections - 35 U.S.C. § 112***

10. Previous rejection of Claims 3-4 under 35 U.S.C. § 112, second paragraph, as being indefinite for the enzyme name “inosine-guanosine kinase or phosphatase” is maintained. Applicants’ arguments have been fully considered but are not deemed persuasive.

Applicants argue that this rejection is mooted based on an amendment to the claims, particularly to the limitation to *M. morganii*. This is not the case for several reasons. In Claims 3 and 4, the “enzyme capable of synthesizing the purine nucleotide” is limited to “inosine-guanosine kinase or phosphatase derived from *Morganella morganii*” as amended. Firstly, the term “derived from” is unclear. Must the enzyme or enzymes be native to *M. morganii* (i.e. an exact sequence from a naturally-occurring *M. morganii*)? Or can **any** enzyme that can be obtained via the *M. morganii* enzyme be used in the claimed methods since, by using recombinant technologies of the art, **any** enzyme sequence can be “derived” from any other enzyme sequence? Secondly, does the phrase “derived from” modify both the kinase and the phosphatase enzymes or just the phosphatase enzyme as implied in the specification (see page 12)?

As previously noted, the definition of inosine-guanosine kinase is clear in light of the specification. On page 12, examples from two WIPO documents are cited, both of which reflect inosine kinase (E.C. 2.7.1.73), a.k.a. inosine-guanosine kinase, a well-known, art-defined purine biosynthetic pathway enzyme with affinity for both inosine and guanosine that can catalyze the phosphorylation into their respective nucleotides. However, “phosphatase”, even having the limitation of being native to *M. morganii*, is a large and broad class of enzymes, most of which will not catalyze the required reaction of guanosine to GMP in the culture conditions required by

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the claim limitations. Any limitations from the JP documents cited in reference to the phosphatase in the specification cannot be interpreted into the claims.

***Maintained - Claim Rejections - 35 U.S.C. § 102***

11. Previous rejection of Claims 1, 2, 5, and 7 under 35 U.S.C. § 102(b) as being anticipated by Fujio *et al.* (IDS reference) is maintained. Applicants' arguments have been fully considered, but are not deemed persuasive.

Applicants argue that Fujio *et al.* do not teach secreted XMP precursor in the methods and that this is a claim limitation of the amended claims. This is not the case. Firstly, the added limitation "to accumulate said precursor of the purine nucleotide in the culture" does *not* require cell membrane permeability to "secrete" XMP outside the cell as indicated in Applicants' arguments since within the cell, as argued to be taught by Fujio *et al.*, is still within the culture.

Moreover, as previously noted:

"Fujio *et al.* teach a method of production of GMP using *E. coli* transformed with a gene for GMP synthetase (XMP aminase) under the control of the temperature-sensitive P<sub>L</sub> promoter (see page 842, right column). *E. coli* inherently contain XMP, a precursor; and Fujio *et al.* teach their method as industrial production of GMP, thus inherently containing a recovery step." (see Paper No. 8, paragraph 17)

In addition to the above teachings, Fujio *et al.* also teach adding Nymeen S-215 and xylene to the cultured broth to promote permeability of the cell membranes to nucleotides (see Abstract).

Thus, any definite limitation to secreting XMP from the cell amended into the instant claims would also be anticipated by Fujio *et al.*

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12. Previous rejection of Claims 1 and 3-6 under 35 U.S.C. § 102(b) as being anticipated by Usuda *et al.* (EP 0816491) (IDS reference) is maintained. Applicants' arguments have been fully considered, but are not deemed persuasive.

Applicants argue that in Usuda *et al.*, the inosine kinase gene is constitutively expressed and, thus, is not inducible. The Examiner disagrees with this assessment, particularly as it relates to the claim language of Claim 1. Nowhere in Claim 1 is inducibility by events other than transformation required; these limitations are found in Claim 7, which is not anticipated by Usuda *et al.* Such limitations cannot be read into the claims, particularly when dependent claims add such limitations.

As previously noted:

"Usuda *et al.* teach methods of making IMP and GMP by transforming a host cell, for example *C. ammoniagenes*, with a gene encoding inosine-guanosine kinase (see Example 1)." (see Paper No. 8, paragraph 18)

and thus Usuda *et al.* meet all the effective limitations of the instant claims.

Applicants also argue the permeability issue of nucleotides. As noted above, the added limitation "to accumulate said precursor of the purine nucleotide in the culture" does *not* require cell membrane permeability to "secrete" inosine or guanosine outside the cell as indicated in Applicants' arguments since within the cell, as argued to be taught by Usuda *et al.*, is still within the culture. Moreover, Usuda *et al.* also teach adding Nymeen S-215 to the cultured cells to promote permeability of the cell membranes to nucleotides (see Examples 2 and 3, page 12). Thus, any definite limitation to secreting inosine or guanosine from the cell amended into the instant claims would also be anticipated by Usuda *et al.*

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Applicants also argue, in footnote 2, that Usuda *et al.* and other prior art (the Examiner assumes Applicants are referring to Fujio *et al.*) teach away from accumulating purine nucleotides due to feedback inhibition of GMP. This argument is not found persuasive due to the inclusion of Nymeen S-215 in the cultures allowing for permeability of cell membranes to nucleotides, thus, obviating any problem with feedback inhibition.

***Maintained - Claim Rejections - 35 U.S.C. § 103***

13. Previous rejection of Claim 7 under 35 U.S.C. § 103(a) as being unpatentable over Usuda *et al.* in view of Katsumata *et al.* (US 5,439,822) is maintained. Applicants' arguments have been fully considered but are not deemed persuasive for the following reasons.

Applicants argue that because Usuda *et al.* does not teach the limitations of the base claim and because Katsumata *et al.* does not make up for these deficiencies, the rejection should be withdrawn. As noted above, Usuda *et al.* anticipates the Claim 1, thus, Applicants' arguments are not persuasive.

14. Previous rejection of Claims 8 and 20 under 35 U.S.C. § 103(a) as being unpatentable over Fujio *et al.* or Usuda *et al.* (EP 0816491) (IDS reference), either in view of Katsumata *et al.* (US 5,439,822) is maintained. Applicants' arguments have been fully considered but are not deemed persuasive for the following reasons.

Applicants argue that because neither Fujio *et al.* nor Usuda *et al.* does not teach the limitations of Claim 1 and because Katsumata *et al.* does not make up for these deficiencies, the rejection should be withdrawn. As noted above, Fujio *et al.* and Usuda *et al.* anticipate the Claim 1, thus, Applicants' arguments are not persuasive.

## **NEW OBJECTIONS/REJECTIONS**

### ***Objections to the Specification***

15. The disclosure is objected to because of the following informalities:
- a) The first paragraph of the specification, amended on May 21, 2002 to cite the status of the CPA application, is unnecessary since, in CPA practice, no new application number is given. Applicants are instructed to delete this redundant paragraph.
  - b) Four sequences (DNA oligomers) are listed in the sequence listing filed on February 2, 2000; however, none of the sequences are described in the specification. Their inclusion in the sequence listing is confusing; their description in the specification is required.

Appropriate correction or clarification is required.

### ***Objections to the Claims***

16. Claim 2 is objected to for containing inconsistent language. In Claim 1, "XMP" is the term used to describe "5'-xanthylic acid", an alternate name for the compound used in Claim 2. Consistent language in the claims is required. The Examiner suggests replacing all occurrences of "5'-xanthylic acid" with ---XMP--- for consistency.

### ***Claim Rejections - 35 U.S.C. § 112***

The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

17. Claims 1-2, 5-8, and 20 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

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applicant regards as the invention. The instant claims are confusing because "XMP" is **both** a purine nucleotide (a product of the claimed methods) and a precursor (a reagent of the claimed methods), specifically of the purine nucleotide GMP. XMP is in a Markush group with nucleosides (unphosphorylated nucleotides). The dual role of XMP (precursor and purine nucleotide) and the generic terminology in Claim 1 render the language confusing, particularly in line 7 where the phrase "the purine nucleotide" is confusing as to its antecedent basis. The Examiner suggests rewriting the XMP embodiments in a different, independent claim to facilitate clearer language.

The following is a quotation of the first paragraph of 35 U.S.C. § 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

18. Claims 1, 3-8, and 20 are rejected under 35 U.S.C. § 112, first paragraph, written description, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 is drawn to methods of making purine nucleotides using DNA encoding enzymes that convert particular purine precursors into purine nucleotides; this DNA is claimed solely by function and without any structural limitations. The prior art is particularly replete with examples of purine biosynthetic pathways and their enzymes; however, the art does not support the claimed genus.

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The Court of Appeals for the Federal Circuit has recently held that a “written description of an invention involving a chemical genus, like a description of a chemical species, ‘requires a precise definition, such as be structure, formula [or] chemical name,’ of the claimed subject matter sufficient to distinguish it from other materials.” *University of California v. Eli Lilly and Co.*, 1997 U.S. App. LEXIS 18221, at \*23, quoting *Fiers v. Revel*, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993) (bracketed material in original). To fully describe a genus of genetic material, which is a chemical compound, applicants must (1) fully describe at least one species of the claimed genus sufficient to represent said genus whereby a skilled artisan, in view of the prior art, could predict the structure of other species encompassed by the claimed genus and (2) identify the common characteristics of the claimed molecules, e.g., structure, physical and/or chemical characteristics, functional characteristics when coupled with a known or disclosed correlation between function and structure, or a combination of these.

Upon first examination of the instant method claims, the written description of “DNA which can express an enzyme capable of synthesizing purine nucleotides from said precursor” would seem to be supported by the art. Purine nucleotides, including IMP, XMP, and GMP, are synthesized in well known biosynthetic pathways from precursors XMP, guanosine, inosine, and adenosine. For example, in the art it is known that XMP is converted to GMP by GMP synthetase (a.k.a. XMP aminase, E.C. 6.3.5.2), guanosine and inosine are converted to GMP and IMP, respectively, by inosine kinase (a.k.a. inosine-guanosine kinase, E.C. 2.7.1.73), and adenosine is converted to inosine and then IMP by adenosine deaminase (E.C. 3.5.4.4) followed by inosine kinase.

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In the instant specification, “DNA which can express an enzyme capable of synthesizing purine nucleotides from said precursor” is described as encoding XMP aminase, inosine kinase, a phosphatase, or adenylate kinase (see pages 11-12, bridging paragraph). The use of XMP aminase and inosine kinase with the required precursors, XMP, guanosine, inosine, and adenosine, is well supported in the art; the use of a phosphatase and adenylate kinase with the required precursors is not well supported. A phosphatase *removes* a phosphate group, for example from a purine nucleotide, at neutral pH, and adenylate kinase uses ATP and AMP (not adenosine) to produce ADP and pyrophosphate. The instant specification supports this discussion of enzymes with examples using XMP aminase and inosine kinase but not using a phosphatase or adenylate kinase.

It is clear enough from dependent Claims 3 and 4 (note rejection under 35 U.S.C. § 112, second paragraph above), as well as the specification, that enzymes *other than* the art-recognized purine biosynthetic pathways enzymes, as noted above, are the intended scope of “DNA which can express an enzyme capable of synthesizing purine nucleotides from said precursor” in Claim 1 when read in light of the specification. Particularly, the use of any phosphatase or adenylate kinase does not have adequate written description in the specification and is not supported by the art. Thus, the specification does not describe the subset of enzymes that will catalyze the desired purine nucleotide reactions, wherein this subset is broader than the art-recognized purine biosynthetic pathway enzymes, in clear, structural terms such that one of skill in the art would be able to predict the structure of other members of the claimed genus.

Particularly, in Claims 3 and 4, *any* phosphatase can be used. Moreover, where the unclear phrase “derived from” intends the phosphatase to be native to *M. morganii*, any

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phosphatase from *M. morganii* can be used. But not all phosphatases, in fact only a few, will catalyze the phosphorylation of purine precursors (note: a phosphatase reaction typically *removes* a phosphate under neutral, culture conditions). The specification does not describe the subset of phosphatases that will catalyze the desired reaction in clear, structural terms such that one of skill in the art would be able to predict the structure of other members of the claimed genus.

The Examiner notes that the instant rejection is not set forth against Claims 3 and 4 drawn to using DNA encoding inosine-guanosine kinase because this genus is well supported by the art and the specification. The Examiner suggests deleting "phosphatase derived from *Morganella morganii*" from the claims and canceling Claim 1 to obviate the instant rejection.

19. Claims 1, 3-8, and 20 are rejected under 35 U.S.C. § 112, first paragraph, scope of enablement, because the specification, while being enabling for methods using DNA encoding known purine biosynthetic enzymes, does not reasonably provide enablement for methods using DNA encoding *any* enzyme that catalyzes particular purine biosynthetic reactions. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims. To identify and use all such DNA would require undue experimentation.

The factors to be considered in determining whether undue experimentation is required are summarized in *re Wands* 858 F.2d 731, 8 USPQ2d 1400 (Fed. Cir, 1988). The Court in *Wands* states: "Enablement is not precluded by the necessity for some experimentation such as routine screening. However, experimentation needed to practice the invention must not be undue experimentation. The key word is 'undue,' not 'experimentation.' " (*Wands*, 8 USPQ2d 1404).

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Clearly, enablement of a claimed invention cannot be predicated on the basis of quantity of experimentation required to make or use the invention. "Whether undue experimentation is needed is not a single, simple factual determination, but rather is a conclusion reached by weighing many factual considerations." (Wands, 8 USPQ2d 1404). The factors to be considered in determining whether undue experimentation is required include: (1) the quantity of experimentation necessary, (2) the amount or direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims. While all of these factors are considered, a sufficient amount for a *prima facie* case is discussed below.

The instant specification is enabled for methods using inosine kinase to convert guanosine or inosine into GMP or IMP, respectively, as evidenced by Example 3 (see Claims 3 and 4 - partial). The instant specification is enabled for methods using XMP aminase to convert XMP to GMP as evidenced by Examples 1 and 2 (see Claim 2). The instant specification is **not** enabled for using a *M. morganii* acid phosphatase, as described in JP 09-037785, to convert inosine or guanosine to IMP or GMP, respectively, (see Claims 3 and 4 - partial) because this phosphatase is described as productively phosphorylating purine precursors at low pHs (see attached Abstract) and the instant methods require culturing-condition pH values. Moreover, the instant specification is not enabled for the full scope, as read in light of the specification, of Claim 1.

The specification provides no guidance or working examples for identifying and using DNA encoding enzymes that meet the functional limitation required in Claim 1, except for the

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use of XMP aminase and inosine kinase. The art supports other, well known purine biosynthetic pathway enzymes as noted above, and the specification is enabled for these. The state of the prior art is such that copious amounts of experimentation have been done to identify purine biosynthetic pathways, and "alternative pathways" are likely the product of side reactions of similar enzymes, such as the acid phosphatase, which may or may not be effective in the instant methods. The ability to identify new enzymes to catalyze these known reactions is wholly unpredictable, and more poignantly, the structure of DNA encoding such enzymes is also wholly unpredictable. Since these DNA are required to be enabled, either particularly by description in the specification or predictably by the art, for the methods to be enabled, the instant methods are not enabled to the full extent of their scope.

Based on the enablement issues raised herein, the Examiner suggests limiting the instant claims to using DNA encoding inosine kinase or XMP aminase whose precursors are guanosine, inosine, and/or XMP.

### *Summary of Pending Issues*

20. The following is a summary of the pending objections/rejections in the application:
- a) The disclosure stands objected to for informalities concerning the first paragraph and the notation of sequences in the specification.
  - b) Claim 2 stands objected to for containing inconsistent language.
  - c) Claims 1-2, 5-8, and 20 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite because "XMP" is both a purine nucleotide and a precursor of the purine nucleotide GMP.
  - d) Claims 3-4 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for the enzyme name "inosine-guanosine kinase or phosphatase".

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- e) Claims 1, 3-8, and 20 stand rejected under 35 U.S.C. § 112, first paragraph, written description.
- f) Claims 1, 3-8, and 20 stand rejected under 35 U.S.C. § 112, first paragraph, scope of enablement.
- g) Claims 1, 2, 5, and 7 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Fujio *et al.*
- h) Claims 1 and 3-6 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Usuda *et al.*
- i) Claim 7 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Usuda *et al.* in view of Katsumata *et al.*
- j) Claims 8 and 20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujio *et al.* or Usuda *et al.*, either in view of Katsumata *et al.*

### ***Conclusion***

21. Claims 1-8 and 20 are not allowed for the reasons identified in the numbered sections of this Office action. Applicants must respond to the objections/rejections in each of the numbered sections in this Office action to be fully responsive in prosecution.

~~The instant Office action is non-final~~ by virtue of Applicants' filing of a CPA with entry of an amendment, which necessitated new grounds of rejection herein.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kathleen M Kerr whose telephone number is (703) 305-1229.

The examiner can normally be reached on Monday through Friday, from 8:30am to 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ponnathupura Achutamurthy can be reached on (703) 308-3804. The fax phone

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numbers for the organization where this application or proceeding is assigned are (703) 308-0294 for regular communications and (703) 305-3014 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0196.

KMK

August 11, 2002

A handwritten signature in cursive script, appearing to read "Katharine", followed by a horizontal line and a final flourish.